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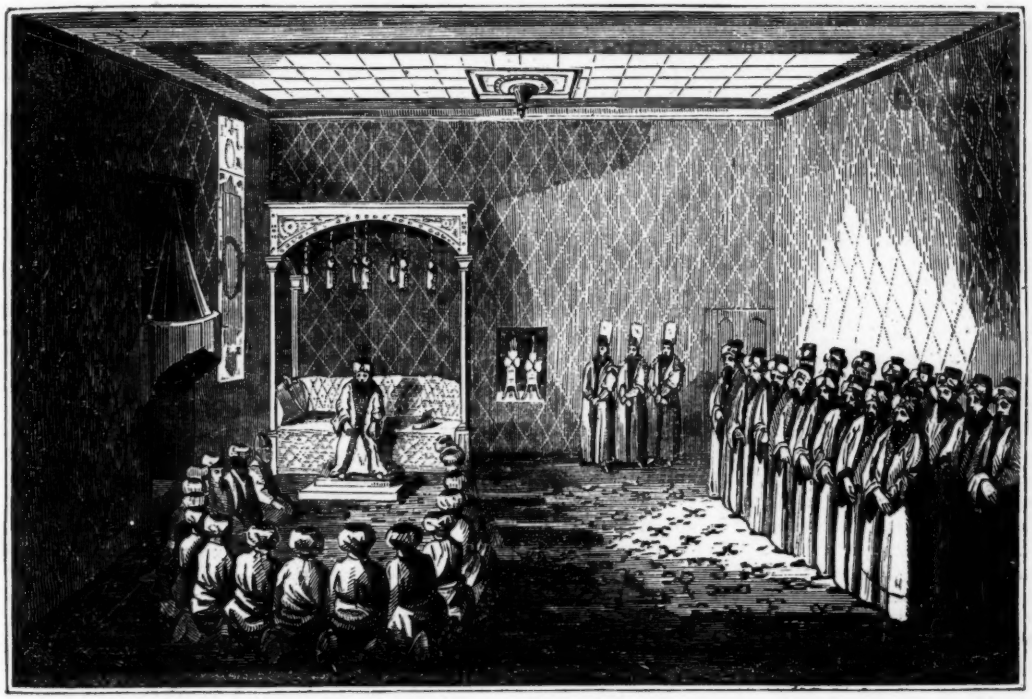

THE FESTIVAL OF THE BAIRAM.

The Festivals of the Bairam.

In a former paper* we gave an account of the famous fast of the Ramazan, or Turkish Lent, as it has been called, and we then mentioned the festival of the Bairam, which follows immediately upon that fast, and has been sometimes styled the Turkish Easter, though there is little ground of comparison between it and the Christian festival of that name. Besides this Bairam, to which the epithet of great has been affixed, there is another festival in the Turkish calendar, called the *Courban Bairam*, which is remarkable for the general sacrifice of animals that accompanies it. The first of these festivals is called *Id-fitz*, or the "breaking of fast," because it succeeds immediately to the privations of the Ramazan; the second, or Courban Bairam, is denominated *Id-ad'hla*, or the "feast of sacrifices." The former, which always lasts for three days, though properly it should be but for one, takes place on the first of the ninth Turkish month, called *Schewal;* the latter, which lasts four days, is fixed just seventy days afterwards,—or on the tenth day of the eleventh month Zibhidjé. The Mohammedan year is lunar; consequently, in the course of thirty-three years these two festivals (like the Ramazan) run through the whole of our Julian or solar calendar, and are successively celebrated in all the different seasons of the year. The seven days of rejoicing which they afford, constitute the whole term of public diversion which the Turkish people generally enjoy in the course of the year; for the two Bairams are their only holidays. There is nominally a third festival in the Turkish calendar,—the *Mevlut*, or nativity of the Prophet (Mohammed), but this is considered as confined to the court.

The Great Bairam is more a festival of general rejoicing than of religious rites; there is, however, a peculiar service of prayer fixed for it, which is of canonical obligation, like the weekly service of Fridays, and which must be performed between the hour when the sun has risen to the apparent height of a lance in the heavens, and the period of his beginning to decline—the canonical period of noon. It is also deemed praiseworthy in the Moslem to put on clean new clothes on this solemn day, and to recite, in his passage along the streets to the mosque, the prayer called *Tekbir*.

A learned English divine, Dr. Thomas Smith, who was chaplain to the British ambassador at Constantinople, between the years 1668 and 1671, and who wrote a little Latin work on the manners and institutions of the Turks, gives us the following notice of the proceedings which then took place on the festivals of the Bairam,—for the second, or Courban Bairam, is, with the addition of the sacrifice, a repetition of the Great Bairam, on a rather diminished scale.

"Early in the day, cannon are fired, drums are beaten, and the whole city resounds with music and

* See *Saturday Magazine*, Vol. VIII., p. 105.

singing; those who at other times are grave in face, and melancholy of visage, now indulge in games and dancing, and besprinkle those whom they meet with perfumed water, and render themselves agreeable and joyful companions, as if with their new vests and turbans, they had put on also a new nature and disposition. Hence there are mutual invitations to feasting, and reciprocal gifts. At this season, too, almost innumerable sheep are killed; they call the rite Courban, or "the sacrifice," by which they think that God may be appeased and rendered propitious. Every man is his own priest, and is allowed to perform the ceremony in his own private house."

Later travellers all concur in representing the season of the Bairam as one unrivalled for festivity; the Turks visit each other, the grandees especially, with great state,—compliments and presents are interchanged, and there is a general indulgence in the pleasures of society, and hospitality to an extent quite unusual with this grave people. All traffic and business is interrupted, and every one puts on a new dress, whatever may be his condition in life (at least so it used to be); children kiss the hands of their parents and relations,—the young similarly salute the aged, and the respect of inferiors is marked by kissing the hem of their superiors' garments.

"Oh! what a happy day," says an American traveller, "was that! Every countenance graced with a smile—the beggar himself a king! The ships of the navy gaily dressed in innumerable flags; the forest of merchant-vessels in their national colours."

Mr. Carne gives us an interesting picture of the anxiety with which the commencement of this festival is looked for. "With what tumultuous joy," he says, speaking of the night which preceded it, "did the believers deport themselves in a coffee-house not far from the English palace! They danced wildly in groups to the sound of the guitar and tambour, embraced one another as they talked of the night near at hand, when the first appearance of the new moon should announce that Ramazan was over, and Bairam was begun. It came at last: on that night, every minaret of the grand mosques was illuminated from top to bottom with innumerable rows of lamps. You could distinguish those of Achmed Suleimanieh and St. Sophia; it was a peculiar and splendid sight, and the vast city and its people seemed to be hushed in the stillness of midnight, waiting for the signal of festivity. The Imaums, from the tops of the highest minarets, eagerly bent their looks to catch the first glimpse of the new moon. The moment it was perceived, loud and joyful shouts, which spread instantly all over the city, announced that the hour of indulgence was come, and full compensation for all their denials. It was really pleasing to observe, the next day, the looks of kindness and almost fraternal feeling which they cast on each other. The poor man is often seen at this period to take the hand and kiss the cheek of the rich and haughty, who returns the salutation as to his equal or brother. Delight was pictured on every countenance, every one put on his finest apparel, and the sound of music was heard on every side, mingled with songs in honour of their religion."

Yet there is a want of that sprightly and noisy rejoicing which usually marks festivals in other countries; the Turks cannot wholly throw off their gravity and phlegm,—they carry it even into their festivities. In the capital, the police take care that the true believers shall not raise the heat of their joy by any forbidden indulgences; a seal is put, the night before each Bairam, on the wine-shops, which exist only in the quarters inhabited by the Christians.

The first day of the Bairam is a day of important ceremonies at court. The sultan receives the homage of the different orders of the state at the Seraglio, and immediately afterwards proceeds to attend the service of the mosque of Sultan Achmet, with a retinue far more brilliant than he is accustomed to display on any other occasion; all the ministers and great officers of the empire accompany him, as do also several of the most distinguished *oulemas*, or men of the law. This is the famous "procession of the Sultan at the feast of the Bairam," of which we read so much in the works of travellers; the testimony of all allows that it is a very splendid one.

The sultan generally comes from his palace on the European side of the Bosphorus, with a crowd of splendid thirty-six-oared barges, and lands in the Port at the Golden Gate of the Seraglio. He enters, proceeds to the Seraglio, and again issues at the celebrated gate called the "Sublime Porte," in the middle of a long and brilliant procession. First come the officers of his household, splendidly dressed, and mounted on richly-caparisoned horses; next is the divan, in like manner dressed and mounted; next the officers of state; then fifteen or twenty most beautiful horses, led by their grooms,—"a noble sight, and worthy of being exhibited, whether for the beauty of the animals or the richness of their caparisons, which nothing can excel." Next come the sultan's pages, gorgeously arrayed in embroidered frock-coats, and caps decorated with lofty plumes, ornamented with flowers; these were not mounted. At last, appears the sultan, generally the plainest dressed man of the pageant, as things are now managed, but mounted on the finest horse, and looking, as travellers say, "every inch" a sultan. A numerous train of personal attendants, richly dressed, and on foot, follows. The whole procession passes between lines of soldiers under arms, who present them the instant of the sultan's appearance at the Porte, and at the same moment the band strikes up the "March of the Sultan." It is easy to conceive that it must be "a splendid and animated scene."

The procession passes on to the mosque, and the sultan performs his devotions; he then returns by the same route, and embarks again at the Golden Gate. "The whole quay," says an American traveller, speaking of the festival in the year 1832, "was covered with soldiers, drawn up to salute him. At length, the gate flew open,—the sultan appeared with his pages and attendants, and accompanied by two little boys, whom he embraced on leaving. He was then assisted into the boat, which instantly put off, and with the rapidity of lightning, cut the waves, for Tophana, where the sultan went to inspect his grand foundry and laboratory."

This celebrated procession seems to have been shorn of much of its ancient splendour, or at least of the interest which it formerly found in the eyes of strangers. Before the destruction of the Janissaries, those strange unruly troops used to perform the duty which is now assigned to the more disciplined soldiers that have been raised upon the European model by the present sultan; and it is hardly possible to doubt for a moment which would look the most picturesque in an Eastern procession,—the quaint costume and arms of the Janissaries, with their large felt caps and white staves, and their sallow-looking visages, "as novel," to use Dr. Clarke's remark, "to an Englishman's eye, as any objects in the Turkish empire,"—or the ill-cut, slovenly, dirty-white cotton uniform of the sultan's new troops, with their tarnished muskets and bayonets. Nevertheless, the spectator has gained something by the change; instead of that violent

pushing and fighting, and plentiful use of sticks which generally characterized the labours of the Janissaries in what they called keeping order, he cannot fail to observe the quiet and respectful demeanour of the "tacticoes," and a disposition in them to accommodate the lookers on, which no one ever dreamed of encountering in their wild and insolent predecessors.

There are two parts of the procession still worthy of attention. The one is the line of the sultan's led-horses, stepping along proudly, or prancing under their costly furniture, as if conscious of their own beauty and of the ornaments which they bore. The second, and perhaps the most attractive, is the line of the sultan's sumpter-horses, laden (according to Dr. Clarke's list) with the ancient armour which is still preserved in the old church of St. Irene, in the Seraglio, and among which are the celebrated Greek bucklers and shields, magnificently embossed and studded with gems, and some of them even seeming to be formed of gold,—"the carefully-guarded trophies," as Mr. M'Farlane says, "won from the fallen eastern empire, which never meet the vulgar eye, save on great occasions such as the present."

The festival of the Bairam has suffered other diminutions of its ancient attractions. Dr. Clarke, who visited Constantinople at the beginning of the present century, mentions an exhibition as then following the procession, which seems to have been omitted of late years.

"When the ceremony concluded," he says, "the Grand Seignor, accompanied by the principal officers of state, went to exhibit himself in a kiosk, or tent, near to the Seraglio Point, sitting on a sofa of silver. We were enabled to view this singular instance of parade from a boat stationed near the place; and after the sultan retired, were permitted to examine the splendid pageant brought out for the occasion. It was a very large wooden couch, covered with thick plates of massive silver, highly burnished. From the form of it, as well as from the style in which it was ornamented, there is little doubt that this also constituted a part of the treasury of the Greek emperors when Constantinople was taken by the Turks."

This splendid sofa is kept in a building called the *Techid Kiosk*, or the green pavilion,—a beautiful marble structure, surrounded with a portico, and cased, for its better preservation, in a covering of green painted canvass. It is situated close by the place of exhibition mentioned by Dr. Clarke, which is the first public landing-place above the point of the seraglio, and "where it *was* usual," (so says one of our most recent travellers) "in grand solemnities, to have tents placed for the dignitaries of the empire, and foreign ministers, to witness the fireworks and other public sports there exhibited," on which occasions the sultan was seated on his silver throne

It would seem, then, that the present ruler of Turkey is not so much disposed to make a parade of his person as his predecessors were; instead of exhibiting himself on the silver throne, as in Dr. Clarke's time, after the procession to the mosque, he runs off to his arsenal to inspect new guns, or to see how matters are getting on in some other of his establishments. There are now, too, no games of the djerid, or sports of bull-baiting and wrestling, for the gratification of the people, and the delight of travellers; the sultan wishes to wean his subjects from their attachment to those national diversions, and treats them instead with a review of his "tacticoes," or new regular troops*. The two days which follow this opening of the Bairam are devoted to festivity.

As we have already explained, the month of the Turkish Ramazan, in its progress through all the various seasons of our Julian year, must occasionally fall together with the fixed period assigned for the celebration of the Carnival of the Greek Christians; and whenever such a coincidence does take place, it is scarcely possible to conceive anything more likely to raise the bile of the irritable Mussulman while his penance is upon him, or more calculated to lead him into excesses when the term of it has expired, than to see these abject and dependent beings, whom he is accustomed to treat with such contempt and cruelty, displaying the ineffable presumption to be gay and happy, while he, their grave and haughty master, is compelled by the ordinances of his religion to be gloomy and miserable.

The Courban-Bairam differs from the Bairam only in having the additional ceremony of the sacrifice. Every Mussulman of free condition and fixed residence, is bound to offer up a sheep, an ox, or a camel. Those whose means are not abundant, may join together in the sacrifice of a single animal. Sheep are generally the victims,—and the rich often sacrifice as many as eighteen or twenty. The flesh is eaten, or given to the poor, under certain conditions.

* See *Saturday Magazine*, Vol. VII., p. 90.

THE MONTH OF APRIL.

There is a simple pure delight,
Which the heart feasts on, in the sight
Of NATURE, when aside she throws
The wintry cearments that enclose
Her vegetable forms, and keep
Their senses in sepulchral sleep.
Yet are there some, to whom, untaugh
By holy love divine, the thought
Of nature's renovating spring
May rather by dark contrast bring
Sad thoughts and cheerless. Thus on thee,
Sweet rural bard of Sicily,
Sweet Moschus, by thy Dorian well
Reflection's bitter spirit fell,
And steep'd in tears thy plaintive verse,
Hung on lamented BION'S hearse,
"Alas, Alas, the garden flower,
When, spent its transitory hour,
With shrivell'd leaves and faded, dies,
Nipt on its native bed it lies,
Again the withered head shall rear,
And flourish yet another year.
But we meanwhile, of human birth,
The great, the brave, the wise of earth,
As soon as once o'erspent we die,
Within the earth's dark caverns lie,
Inglorious; and for ever keep
A long, an endless, wakeless sleep!"
Truce to the MELANCHOLY SHRINE!
Be rather ours this lenten time,
This time of Spring revived, to greet
Returning April's season sweet;
Pledge of the time, when like the flower,
Which now with renovated power
Is wakened, man again shall bloom;
Yet not like it in wintry gloom
Again to wither and decay,
But flourish in eternal day!
Then APRIL, hail! With CHEERFUL tone
I bid thee welcome: not alone
For that thou com'st and bring'st along
The sight, and smell, and tuneful song
Of leaf, and flower of mingled hue,
And many a plumed warbler new:
But that, with holy wisdom fraught,
Thou wakest withal the grateful thought,
That, when these pleasant things are o'er,
Things still more pleasant are in store
In God's celestial paradise
"For those that love him;" passing bliss
"Which human eye or ear can scan,
Nor dwell they in the heart of man!"

[Abridged from BISHOP MANT'S *British Months*.]

THE SUGAR MAPLE TREE,

(Acer saccharinum.)

THE SUGAR MAPLE.

WE have already described, Vol. II., p. 219, the manufacture of sugar from the sugar-cane, but there are many other productions of the vegetable kingdom which produce the same useful and nutritious substance. In France, during the war, when the government of that country had closed its ports against our colonial produce, the manufacture of sugar from beet-root was carried on to a great extent, and even now, considerable quantities are made from that vegetable. But neither the sugar-cane nor the beet will grow in very cold climates; and under many circumstances the inhabitants of these countries would be unable to procure this grateful condiment, if Nature, always watchful for the wants of the creation, had not scattered over the surface of many northern countries, several species of hardy trees, whose juices contain large quantities of saccharine matter. The most conspicuous of these vegetable productions is the Sugar-Maple of North America, (*Acer saccharinum.*) This tree is of great service to the settlers in Canada and in the United States, especially to those at a distance from any large town.

The Sugar-Maple is found in great quantities in all the Middle States of the American Union; but those which grow in New York and Pennsylvania, yield the sugar in greater quantities than those produced on the waters of the Ohio. They sometimes appear in groves, covering five or six acres in a body, but they are more commonly interspersed with the beech, the ash, the wild-cherry, and other forest-trees. In these places, from thirty to fifty trees are generally found upon an acre of ground. They are, when fully grown, of considerable size, and from two to three feet in diameter. In the Spring, they put forth a beautiful white blossom before they show a single leaf. The colour of this blossom distinguishes them at first sight from the *acer rubrum*, or common maple, which has a blossom of a red colour. The wood of the Sugar-Maple forms excellent fire-wood, and is much sought after by hunters and others for that purpose, and its ashes afford a great quantity of potash; in this respect, it is excelled by few, if any, of the trees of America. Its small branches are so much impregnated with sugar, as to afford support to the cattle, horses, and sheep, of the first settlers during the Winter, before they are able to cultivate forage for that purpose. It is supposed to arrive at its full growth in the woods in twenty years.

The season for tapping the trees for the purpose of obtaining the sap, is in February, March, and April, but this depends much upon the weather: warm days and frosty nights are most favourable to the discharge of the sap. The quantity obtained from a tree in one day varies much, from five gallons to as little as a pint, according to the greater or less heat of the air. The perforation in the tree is made either with an axe or an auger, the latter is preferred. The instrument is introduced about three-quarters of an inch into the tree, and in an ascending direction, that the sap may not be frozen in its slow current in the mornings and evenings, and the opening is afterwards deepened gradually to the extent of two inches. A spout is introduced about half an inch into the hole made by the auger, and projects from three to twelve inches from the tree. This spout is generally made of sumach or elder, which commonly grow in the neighbourhood of the sugar-trees. The tree is first tapped on the south side, and when the discharge of sap begins to decrease, an opening is made on the north, from which a new discharge takes place. The sap flows from four to six weeks, according to the severity of the weather. Vessels large enough to contain three or four gallons are placed under the spout, to receive the sap, which is carried every day to a large trough, from which it is conveyed, after being strained, to the boiler.

The tree is not injured by tapping; on the contrary, the oftener it is tapped, the more syrup is obtained from it. A single tree has not only survived, but flourished, after being tapped forty-two times in the same number of years. The effects of a yearly discharge of sap from a tree in improving and increasing the sap, is demonstrated from the superior excellence of those trees which have been perforated in a hundred places by a small woodpecker, in search of insects. The sap of these trees is sweeter to the taste than that obtained from those which have not been previously wounded, and it also produces more sugar.

A tree of an ordinary size yields, in a good season, from twenty to thirty gallons of sap, from which are made from five to six pounds of sugar. Trees which have been cut down in the winter for the support of the domestic animals of the new settlers, yield a considerable quantity of sap as soon as their trunks and limbs feel the rays of the sun in the Spring.

During the Summer, and in the beginning of Autumn, the maple-tree yields a thin sap not fit for the manufactory of sugar. It is used as a pleasant drink in harvest; and in Connecticut, the ancestors of the present race of farmers have in many cases left a single maple-tree in each field, probably intended as a shelter for their cattle, but which now produces a refreshing drink for the weary reaper.

There are three methods of manufacturing the sugar from the sap; first, by freezing the watery parts, and removing the ice thus formed; in this case the residue is a very rich syrup, from which the sugar is afterwards separated by boiling.

The second plan is, by evaporating the sap to dryness merely by the heat of the sun; but as this depends so much upon the state of the weather, the plan usually resorted to is boiling; in this case, nearly the same means are employed as in preparing sugar from the expressed juice of the sugar-cane, which we have already described at Vol. II., p. 219.

IF 'tis a happiness to be nobly descended, 'tis no less to have so much merit, that nobody inquires whether you are so or no.—LA BRUYERE.

THE

ECONOMY AND HARMONY OF NATURE.

I.

The advantages which may be derived from the observation of Nature, have of late years become more appreciated than they had been heretofore, because the general spread of information has led to a correct sense of that noble study, which is more calculated than any other to raise our conceptions of the power and unerring wisdom of a Supreme Being. The study of Nature is suited to our best feelings, and it is in strict accordance with the most innocent and most amiable propensities of the human mind. Whether we contemplate an insect or an elephant,—a mole-hill or a mountain,—the earth or the heavens,—we are lost in wonder and amazement; and the intelligent mind can find in every part of nature, innumerable instances of that power and wisdom which displays itself in the most minute, as well as in the most magnificent objects.

Who, that makes the slightest pretence to intelligence, can look upon the grandeur of Nature and not be moved? Let us imagine the commencement of a new summer's day,—the milky mists hurrying away into thin air, while the cold dews of night are ascending to the clouds,—the luxuriant landscape casting off the dimness and of night, ready to resume its gorgeous day-dress; the glorious sun, the fountain of light, just appearing behind the eastern hills, gilding the horizon in burnished gold. Anon the busy world awakes from its repose, with the vigour of a giant refreshed from his slumbers; the humming sound of voices is heard afar, and the spiral wreaths of blue smoke begin to ascend from the top of the lowly cottage; the merry minstrels of the woods, who a few hours before were drooping and drowsy, are now in full animation, for the cheering influence of morn has tuned their melodious notes, while they soar amid the bright beams of the sun. The fields are clothed in all the majesty and fragrance of nature, and the woods, which had been bared by the wintry blast, obey the influence of Spring, and resume their Summer robes! Who can contemplate this harmony and unity (interrupted only by the hand of art), and not exclaim with the poet,—"Oh, how stupendous is that Power, which raised them all with a word!"

But the true observer of Nature does not merely admire this wonderful display as a whole; he exercises all his senses in studying, physiologically and philosophically, the details which make up the great and grand amount. This can only be done by observation and reflection; but, in order to qualify ourselves for the task, let us *first* consider the conditions of the Vegetable Kingdom, in connexion with the Mineral Kingdom; and, *secondly*, the Animal Kingdom in relation to the Vegetable Kingdom. The first division of the subject, namely, the Vegetable Kingdom, we shall proceed to examine under the heads of Organization, Sustentation, and Decomposition, or the change after death.

The Mineral Kingdom is the medium, either directly or indirectly, through which all organized matter derives its vitality; and this kingdom is, doubtless, among the grandest of all Nature's works, for it supports the Vegetable Kingdom, while the Vegetable supports the Animal Kingdom. The Mineral Kingdom is composed of the primary elements, each of which is, by chemical affinity, also composed of different parts. The matter, therefore, which belongs to the Mineral Kingdom is, technically, called *in*organic matter, because it has nothing of that property in it which, in the Animal Kingdom, we call vitality or action, or that which, in the Vegetable Kingdom, we call life.

*In*organic matter has no inherent power of action in itself, and the parts which compose a mass may be separated, nay, ground to powder, without suffering in any way, except in size and weight; for each part so separated has the same power of attraction, cohesion, and gravity, *in proportion to its bulk*, that the original mass possessed. Organic matter, on the contrary, when divided, and one member separated from another in the Animal Kingdom, causes death; in the Vegetable Kingdom, when the parts are bruised, ground, or otherwise crushed, they lose their vitality or action, and the result is death, in which state, whether animals or vegetables, they both obey the laws of *in*organic matter. The distinction, therefore, between organic matter and *in*organic matter is, that the former is active, and the latter passive.

But although we know that it is from *in*organic matter that organized substances derive their sustentation, and although we may have a chemical analysis of that passive matter, through the medium of which vitality has been communicated, yet the powers of man cannot discover the process or action which communicates life to matter. The Zoologist knows that quadrupeds are the parents of other quadrupeds; the Ornithologist knows that birds proceed from that mysterious thing an egg; the Entomologist knows that when the eggs of insects are deposited in organic remains, or other proper places, they in due time produce other insects; and the Ichthyologist knows that swarms of fishes proceed from the roe of the finny tribes; but in no case can any one of them see, or know, the hidden mystery of imparting life, neither can we have plants of any species, unless others of the same species have gone before them, so that we can go no further than to say, that it is the work of an Infinite Power, and "wondrous in our eyes!"

Let us proceed to consider the second head, namely, *sustentation*; and as the laws which govern one plant govern the whole of the vegetable world, let us select the oak for the illustration of our subject. If the acorn is left in the earth, it sends up a sprout and becomes a plant; but the living principle, in a state of action, not only suspends those laws of chemistry which inorganic matter obeys, but it has a chemistry and mechanism of its own, by means of which it can appropriate all substances near it, that contain the materials necessary for the growth of its own structure, can give them the proper consistencies and forms, and work them into the necessary compounds for that purpose.

The sprout which, before its appearance at the surface, derived its food from the lobes of the acorn, now sends down rootlets, which extract moisture from the earth; while the infant leaf draws nourishment from the air and rain. During the time of growth the growing parts are soft and juicy, and every part has veins or vessels for the transmission of sap; but when the growing is suspended, a new action takes place, the different parts become harder, and, at the close of the season, these parts form themselves into wood and bark. The leaves then fall off, having done their office, and the plant or tree passes into a state of repose for the season. During the action of growth the leaves are not by any means merely ornaments; for the matter absorbed by the rootlets is not convertible to wood and bark without their co-operation. During the second year of a plant, the progress in the young shoots of the same season is the same as it was in the original

sprout, but in the other parts the prepared juice spreads itself between the wood and the bark; first, in a state nearly fluid, then it becomes gradually harder and fibrous, and latterly divides into wood and bark. When that is performed the leaves fall off, and the tree passes into a state of repose as before. The tree, in short, when growing has a continual circulation of sap kept up; that from the roots ascends between the bark and the trunk which it encircles; and the leaves which are acted upon by heat, light, air, and rain, send down the sap, out of which, in its progress to the root, the means of accretion to the size of the plant are deposited. The process carried on during the third and every succeeding year, is the same as that of the second year, only the action is on a more extensive scale.

Having said thus much on the means of vegetable sustentation, I could have wished to notice in this place the *habits* and *economy*, the *utility*, and the *beauty* of plants, which would strikingly illustrate the economy and harmony of Nature; but I regret that the limits of this article will only admit of a passing remark on each of these interesting heads. As to the habits of plants, we find that each is well adapted to the situation in which it is placed. Those which are indigenous to the tropical climates, cannot be made to live in temperate climates without artificial means. The plants of the valley can by no means live on the top of bleak mountains, neither are those which inhabit the latter situations calculated to thrive in fertile plains; while aquatic plants, in whatever situations they are placed, can survive only in their proper element: so that Nature has marvellously adapted her productions to the different situations in which they are placed. Again, there are many peculiarities belonging to plants:—such as shutting their leaves at the close of the day, in order to preserve their flower from the cold dews of night, and at other times to secure and imprison insects; others again will carry their roots along the side of a ditch or pool, so as to avoid the water, and at the end, if near, take a transverse direction through the soil to the opposite side; while in almost every plant, Nature has so fully provided the means of reproduction, that there is a superabundance of seeds, many of which are provided with wings to float in the air, and thus become disseminated.

With regard to the utility of plants, there can be no question about those which daily minister to our comforts and wants in the shape of food, clothing, and manufactures, nor those which support the inferior animals; neither can we forget that many of them are used in the healing art, and minister to the cure of our diseased bodies; but there are others which are but little known in this country that afford the chief support to natives of other climes; and many of those in our own country which are poisonous, are still of the greatest use in dyeing, as astringents, in manufactures, &c. With regard to the beauty of the vegetable kingdom—it is a delightful theme. To give any idea of the innumerable little shoots that are in full action, putting forth their millions of little buds, which a shining day brings into blossom;—to describe the countless millions of little green tufts, which are toiling, like rational creatures at strife, as to which will produce the finest shoot or fairest blossom;—or to give any notion of the many tints and various hues, the blending of shades and gradation of colours, which they receive from light;—to give any idea, I repeat, of these, and of the thousand other beauties that might be named, would occupy more space than my limits allow. We must, therefore, pass on to the third head of this division of the subject, namely, *decomposition*, or *change in death*.

The ages at which plants naturally die, and become subject to the laws of *in*organic matter, are various. Some are annuals, others live two, three, four, and more years, and many of them attain the age of animals, and some trees a much greater length of life; but frequently the most rare and beautiful are the first cut off. The process of decomposition and death supporting action and life, though we know it to take place, and that it is wonderful, is beyond our comprehension. We even find that the refuse and rubbish left after certain tribes have performed their annual renovations, is the food of a variety of fungi, many of which are too small to be seen except by the microscope; yet these singular productions come forth; and when they in their turn die off, their remains contribute to the sustenance of others. This is a most interesting part of the subject, and I regret that I cannot dwell longer on it than to say, that by a universal law of nature, all organized substances lose their vitality at a proper time, and die to support other organized beings that are called into action; and these, in their turn, become food for succeeding generations.

The process of decomposition in the works of Nature is so wonderful, and the results so incredible to those who have not thought on the subject, that it would startle them if they were told that the chemical action on matter is such, that shells and fruits, plants and animals, wood and stones, and many other familiar objects, all have the same elements in common with *cinders*, and *burnt wood*. But our incredulity ceases when we call to mind that this action is the working of an Almighty power.

Before quitting the vegetable kingdom it may not be necessary, after what has been before stated, to revert to the Seasons, or to the suspension of the action of growth in the vegetable kingdom during the Winter season. If the progress of vegetation were continued without intermission, there would be a surplus produce more than could be consumed by the animal kingdom, which would not agree with the economy observable in every part of nature. But the chief object of this suspension is in order that the pulpy parts may have time to become hard, so as to form the wood and bark, and increase the size of the plant. It is a state of repose which renovates the plant, and gives vigour for the forthcoming Spring. This state of suspension and succeeding action is beautifully expressed in the following paraphrase of the fourteenth chapter of Job.

All nature dies and lives again:
The flower that paints the field,
The trees that crown the mountain's brow,
And boughs and blossoms yield,

Resign the honours of their form
At Winter's stormy blast,
And leave the naked leafless plain
A desolated waste.

Yet soon reviving plants and flowers
Anew shall deck the plain;
The woods shall hear the voice of Spring,
And flourish green again.

As the vine, which has long twined its graceful foliage about the oak, and been lifted by it into sunshine, will, when the hardy plant is rifted by the thunderbolt, cling round it with its caressing tendrils, and bind up its shattered boughs; so is it beautifully ordered by Providence, that woman, who is the mere dependent and ornament of man in his happier hours, should be his stay and solace when smitten with sudden calamity; winding herself into the rugged recesses of his nature, tenderly supporting the drooping head, and binding up the broken heart.—WASHINGTON IRVING.

DEBT AND MISERY.

"Out of debt, out of danger," is, like many other proverbs, full of wisdom; but the word *danger* does not sufficiently express all that the warning demands.

To one that is not callous, a state of debt and embarrassment is a state of positive misery; the sufferer is as one haunted by an evil spirit, and his heart can know neither rest nor peace till it is cast out. But as example is at all times more instructive than precept, a living writer shall describe his own feelings when beset with creditors, and may he prove a beacon to the thoughtless ones who are likely to fall into the same gulf.

"Quiet was never my destiny. The first involvement multiplies itself at every move. It destroys the freedom of the intellect and the heart, and drives one into a state of mistiness, which seeks extrication by the very means which augment it. It encourages self-delusions for the sake of momentary peace; and, like inebriety, buys oblivion at the expense of quickly-succeeding pain and sickness. The creditor, who thinks himself sure of his debt at last, delights in giving credit, because he has his debtor at his mercy, makes his own usurious terms with him, and gorges on his blood. He who lives on credit does not dare examine bills; and the creditor charges according to the degree of his own wide conscience. Thus there is a difference of at least cent. per cent. in every article the debtor consumes; and two thousand pounds a-year with him, will not go so far as one in the hands of him who pays ready money, and looks to his accounts.

"Pecuniary embarrassment weakens and chains the mind; and, perhaps, the worst effect of all, is in the indignities to which it subjects its victim. There is no rule of life, therefore, more urgent than to avoid it; nor has a careless man the slightest suspicion of what may be the effect of overlooking a comparatively slight error.

"I lived at a vast expense, without the smallest management; my household was numerous, though not for show; my butcher's weekly bill amounted to a sum that would appear incredible; and my horses ate up the produce of all my meadows and oat-fields, though those which I held in hand were numerous. In short, mine was a sort of 'Castle Rack-rent,' in which all was disorder, and all was waste, while those that plundered me most, and lived on me most, abused me most; and I then spent more in a week than I now spend in three months. Confusion grew upon confusion; and every day it became a more tremendous task to look into things.

"My bitterest enemy cannot condemn the utter thoughtlessness of worldly affairs in which I then lived *more than I do*. It was a sort of infatuation, which, having once been plunged into, I had not the courage to extricate myself from. I knew not what my income was; but no doubt my expenditure exceeded it by many thousands. I kept very imperfect accounts, and every one cheated me."—Brydges' *Autobiography*..

POTTERY AND PORCELAIN.

III.

We have already given accounts of the earthen vessels of the ancients, and of the Chinese manufacture of porcelain. In the present paper we propose to describe more in detail the nature of the materials of which earthenware is composed, and the manufacture of this useful article as practised in England. The term *pottery*, is usually applied to the manufacture of the red, brown, and common white, earthenware of the shops.

The principal ingredients in all pottery, and also in porcelain, are, as we have already stated, clay and flint, combined, in some cases, with a portion of alkali, which causes the partial melting of the flint when at a high temperature.

The materials for pottery are found in great abundance in almost every country. Granite, of which the summits of our highest mountains are formed, contains in its composition, clay and flint in great quantities. The component parts of granite consist of three substances: *quartz*, a kind of flint; *mica*, which appears in thin silvery scales, and chiefly consists of magnesia; and *feldtspar*, which is a compound of clay and flint, with a little potash; this latter *(feldtspar)* is the most abundant material in granite.

The feldtspar, on account of its containing so much clay and potash, is more readily acted on by the atmosphere; the consequence is, that the granite, having lost this greater portion of its substance, crumbles to pieces, and is washed down by the rains into the valleys and beds of rivers.

The quartz and mica, lying on the surface of the mass in the form of sand, are gradually swept away by the weather, and the feldtspar is left, which is also separated, afterwards, into its component parts; the fine particles of flint are blown away, and the clay remains at the bottom: this is potters' clay, and is of different colours and appearance according to its purity. The common yellow clay contains a quantity of iron, to which it owes its colour. In Cornwall, and other granite countries, great mountains of decomposed feldtspar are found, of beautiful whiteness: this is the pipe-clay of commerce.

The flint with which the makers of earthenware are supplied, is chiefly procured, in England, from the coast of Sussex.

In England, the first-known manufactory of pottery, is believed to have been established at Burslem, in Staffordshire, in the year 1686; but the articles were extremely coarse and rude. A few years afterwards, two brothers, named Eders, or Ellers, who came from Holland, introduced very great improvements; and although the jealousy of the inhabitants soon obliged them to quit England, they were not thrown away, and the manufacture gradually became better. In the year 1763, the whole system was changed by the discoveries of Josias Wedgewood, by whose name, all the better description of English pottery is still known.

The method of preparing the clay, that is, of mixing together the clay and flint in proper proportions with water, to produce a plastic mass, is the same in principle as that already described in the account of Chinese porcelain*; but, in this country, machinery is employed instead of hand-labour.

The clay being prepared, the potter forms it into various articles by *throwing*, *pressing*, or *casting*. Throwing is only employed in the case of circular vessels, and the operation is performed by means of a potter's lathe; our engraving represents the workman in the act of throwing the clay, the lathe being turned by an assistant. The operator, placing a lump of clay on the revolving wheel before him, moulds it into the required form with his hands; and in order to ensure an uniformity in the size and curves of a series of vessels, he employs hollow moulds and thin pieces of wood, whose edges are cut in different curves, as modelling-tools. The vessel being now rudely formed into something like the required shape, is removed from the lathe, and set aside to dry. As soon as it has become sufficiently dry for the purpose, when it is in what is called its *green* state, it is

* See *Saturday Magazine*, Vol. VII., p. 204.

removed to the turning-lathe; here it is turned, by means of iron tools, into a more correct form, and its surface is burnished with a smooth steel instrument. In this part of the process the handles and ornaments are fixed on; the parts on which they are to be fixed are previously wetted, and clay reduced to a thin consistence and called *slip*, is employed for the purpose of, as it were, glueing them on. They are now removed to a drying-stove or oven, which is kept at a temperature varying from 80 to 90 degrees of Fahrenheit's thermometer, and when removed from thence they are rubbed over with a wisp of tow to smooth any inequalities.

Another process is *pressing*, by which mode all oval vessels are formed. The mould into which they are pressed is made of plaster of Paris, generally in several pieces, so that the different parts of the vessel, when removed from the mould, have to be united by means of pressure, the edges being first moistened with slip.

The third method of producing form is by *casting*; the clay, in this case, is made into the consistence of cream, and poured into a plaster mould, previously dried. After remaining in the mould a certain time, the liquid clay is poured off. That part, however, which is in contact with the dry mould, has had so much of its moisture absorbed by the plaster, that it is too thick to flow, and remains in the mould, forming a thin coating on the inside, in the form of the article required. The mould and its contents are removed to a stove at a gentle heat, and as the clay loses its moisture, it becomes firmer, and shrinks a little, so as to be easily removable.

The ware, now dry and hard, is fit for the furnace, and is called in this state *biscuit*.

The kiln or furnace in which the biscuit has to be baked, is a building with a cylindrical cavity and a flattish dome; the vessels are placed in cases or *saggers*. These are formed of baked clay, and protect the ware from the direct action of the flames of the furnace; but they are not employed in baking large common red ware.

After passing through the furnace, the vessels are in a fit state to receive the printed designs with which most of our earthenware is ornamented. The designs, which are engraved on copper-plates, are printed at a rolling-press in the usual manner, but the paper on which they are printed is previously rubbed over with soft soap. The colour employed is ground up with some colourless earthy matter, and with linseed oil. After the design is printed, the face of it is laid on the porous vessel and pressed closely to it; the consequence is, that the colouring matter is absorbed, and when the paper is removed and the surface wiped with a wet sponge, the design appears distinctly on the surface of the pottery.

Almost every description of pottery is *glazed*. The glaze consists of any substance which will melt at a lower degree of heat than the vessel itself, and forms a kind of enamel; the use of the glaze is to remedy the inconvenience of the porous nature of the baked clay. The glaze, except when salt is used, is formed into a liquid of the consistence of cream; into this the vessel is dipped, and again subjected to the heat of the furnace.

Many substances have been employed as glazes; some very imperfectly answering the end proposed, and others extremely noxious in their use. The old method of glazing common ware, was by means of salt, which, when thrown into the heated furnace, filled it with a vapour; as this condensed, it settled on the vessels, and formed, if not a very excellent, at least a very wholesome covering.

Unfortunately, the glaze most usually employed for common ware, is composed of litharge, a preparation of lead, which melts into a kind of glass at a certain heat. This is dangerous in two ways; first to the workmen, for the fumes are highly deleterious; and secondly, to those who use the vessel in cookery, as the glaze is easily dissolved by acids, particularly vinegar, which converts a part of it into sugar of lead, a very virulent poison. The beautiful gloss formed by litharge, and the low heat at which it melts, are the chief causes of its being commonly used.

The cause of the cracking of the glaze is, that the glaze itself, and the clay of which it is formed, expand and contract in different degrees, by the alternations of heat and cold.

There is one description of common earthenware, called *stoneware*, which possesses many valuable properties: it is extremely hard and strong, and although not glazed, it is not porous, and has a tolerably well-polished surface. In spite, however, of these excellent qualities, it is seldom employed in the manufacture of any other articles than pitchers, and blacking and soda-water bottles.

POTTERS IN THE ACT OF THROWING THE CLAY.

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